Ontrack Disk Manager Software Installation and Troubleshooting Guide

For PC Compatible Systems

v1.3

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Disclaimer

This installation guide, while accurate, does not attempt to cover all aspects of hard drive installation. Quantum does not warrant that this information will meet your particular needs or requirements. In no event will Quantum be liable to you, your customers, or other users, if the application of the information enclosed herein is not successful.

If you are certain the issue is directly related to your hard drive, refer to our Web site www.quantum.com for detailed information on our products and services. Call our Support Services line (800-377-3475) for automated trouble shooting guides and a list of configuration documents available to you. When calling, please be prepared to provide your hard drive serial number and part number. All other company and product names are the trademarks or registered trademarks of their respective holders. Copyright © 1999 Quantum Corporation, 500 McCarthy Blvd., Milpitas, CA 95035.

Safety first!

Before making any system changes, take the opportunity to backup your data. Data recovery can be costly and time consuming. Remove the AC power plug before removing the cover on your computer. Before touching any chips on your computer, hard drive, or peripheral device, release static electricity from your body. Use either an anti-static grounding strap or by touching the power supply, case, or any bare metal part of your system chassis. Static electricity is invisible and can cause permanent damage so take a few moments to prevent static damage by discharging yourself before making contact.

Tools Required

Before you begin the installation it is recommended that you have the following available:

(1) A formatted, bootable startup diskette (DOS or Win 95/98).
If you intend to use your CDROM to install your operating system, you may wish to add the required entries in the CONFIG.SYS and AUTOEXEC.BAT files to this floppy disk before beginning the installation. This is necessary for DOS or Windows 95. The bootable Windows 98 Startup Disk will provide CDROM device driver support.

(2) An Ontrack Disk Manager diskette.

(3) The operating system installation media (CDROM or floppies).

Note:
If you are unable to boot with this bootable floppy, your system BIOS (CMOS) floppy-boot-sequence setting may require a change (from C, A to A, C) in order for your computer to boot to the A:\ prompt. Read these instructions fully before proceeding to open the drive or system cover.

Overview of Features

Product Features List

- Supports drives larger than 8.4GB for DOS 5, 6, Windows 95/98, and Windows NT 4.0.

- Disk Manager version 9.50 breaks the 8.4 gigabyte size limit barrier imposed by DOS 5.x through 6.x.

- Restructured menus with dynamic 'Quick Reference' information to describe each menu item.

- Advanced Installation presents informative screens to assist the user with installation options.

- Extended INT13 support for Windows 3.1x.

- Revised online help manual to assist users with all levels of experience.

- Extended jumper database includes jumper layout diagrams and information for more than 540 Hard Drives.

- Quickly installs, partitions, and formats hard drives.

- Features FileCopy utility that copies data from one drive to an another making installing a new boot drive with Windows 95 or Windows 98 very easy.

- Features CDUpdate utility that remaps CDROM drive letters when installing a new hard drive.

- Features Hard Drive Diagnostics that perform extensive seek, read and write tests.

- Features Master/Slave Compatibility Tests that check for data transfer and timing problems.

Latest Features: *DiskGo!* for Windows 2.50 / Disk Manager for DOS v9.50

- Integrated utilities (FileCopy and CDUpdate) into *DiskGo!* (No change within Disk Manager for DOS 9.50).

- Boot Wizard - Boot to any ATA drive (that uses a DDO).

- Boot Wizard is only available in the automatic (Easy) mode of *DiskGo!*

Installation with *DiskGo!* v2.50 (Windows 3.1x / 95 / 98 users)

DiskGo! is a Windows-based installation utility that makes adding a new ATA hard drive or replacing an existing ATA hard drive to your system easy. This is the preferred installation method for users of Windows 3.1x/95/98. The *DiskGo!* package also features the FileCopy and CDUpdate utilities to further assist you in installing your new hard drive. See pages 11-13 of this guide for further details on using these utilities.

To use *DiskGo!* follow these steps BEFORE attaching your new hard drive to your system:

1. Make a working copy of the *DiskGo!* diskette. Use the working copy to install your hard drive. Keep the original diskette in a safe place. You can create a fully functional (and bootable) Ontrack *DiskGo!* diskette by downloading the DGDSK250.EXE utility from the Quantum web site at:

   http://www.quantum.com/support/csr/software/csr_software.htm

2. Boot your machine and start Windows.

3. Insert the *DiskGo!* installation diskette into drive A:.

4. For Windows 95/98: Select "Run..." from the Start menu. Type a:\setup

   For Windows 3.1: Select "Run..." from the Program Manager File menu. Type a:\setup

5. Setup will copy *DiskGo!* files to your hard drive and create a *DiskGo!* program group.

6. *DiskGo!* will then:

   a) Ask you how you wish to place your new drive in your system. If you wish to use your new drive to replace your existing drive, *DiskGo!* can assist you in migrating your operating system and data files to the new hard drive (see the section discussing the FileCopy utility).

   b) Make custom installation instructions for configuring and attaching your new drive.

   c) Prepare your new hard drive for use.

Installation with Disk Manager for DOS v9.50

1. Disk Manager for DOS is provided to you for quick and easy installation of stand-alone drives (for Windows 3.1x/95/98 users adding or replacing an existing drive, see the preceding section on installing with *DiskGo!*). Ontrack's Disk Manager is also provided to access the full capacity of your hard drive when the computer system doesn't allow that capability on its own. **After using Disk Manager you will not need to manually partition or format your drive, this will be performed for you during the Disk Manager installation process.**

2. Before you run Disk Manager you must first physically install your new hard drive and make sure you have accomplished one of the following steps described in parts (a) through (f) below. Then continue with the last two steps (3 and 4).
   (Note: exceptions for drives larger than 4096 cylinders).

   a) If your ATA (IDE) card has an installation procedure, follow their instructions. Note that some cards require selecting CMOS to one particular drive type. Some ATA (IDE) cards utilize drivers that may conflict with Disk Manager; a decision as to which program should handle the drive may be necessary.

   b) If there is a choice in the CMOS setup for a drive auto-detect (AUTO), set the CMOS setting for AUTO. There appear to be several situations where BIOS restrictions (4096 cylinder lock-ups, assorted wrap conditions, etc.) cause failure in auto-detect mode, but the percentages of success indicate it should still be a beginning choice. If there are no limitations, Disk Manager will install like FDISK and FORMAT, with no DDO involved.

   ***Note**: the remaining choices are used to insure that the BIOS does not interfere with the DDO installation. The BIOS must not be handling the translation of the drive: turn off any auto-detect features to keep the BIOS from helping (and to help Windows make a discussion between the BIOS as a translator vs. DDO).*

   c) If there is a User Definable Drive Type (UDT) available in your bios, use the CMOS setup procedures to define the drive as recommended by the drive manufacturer for cylinders, heads, and sectors per track (SPT).

   d) For a few BIOS', set the UDT to 1024 x 16 x 63. This can help limited capabilities for both BIOS and Windows 95. Turn off LBA, PIO, 32-bit, and (in some few cases), DMA BIOS options.

   e) If there are no better pre-defined choices, set the drive type in CMOS to Type #1. This choice will always result in a DDO type of installation.

   f) If the drive cannot be installed with the above choices, try to let Disk Manager set up everything by setting the drive type to NOT Installed

Installation with Disk Manager for DOS v9.50 (continued)

3. Boot to a DOS floppy in the A: drive or if adding the new drive as an additional drive boot to the C: drive, then go to the diskette with Disk Manager and type: DM followed by the [Enter] key. Newer versions of Disk Manager diskettes are created to be bootable.

4. See the following section entitled "*Using Disk Manager for DOS to Dynamically Configure an ATA (IDE) Drive*" for Disk Manager installation options. When finished with Disk Manager, the new drive should be available as a DOS drive letter - formatted and ready for files.

Using Disk Manager for DOS to Dynamically Configure an ATA (IDE) Drive

By using Dynamic Drive Configuration, Disk Manager can install virtually any ATA drive in a PC compatible computer. Disk Manager supports Dynamic Drive Configuration in all three-installation modes: Easy, Advanced and Manual. Installation differs slightly in each of these modes, they will be outlined separately.

Easy Mode
This option offers a simplified approach to disk installation. Choose the drive you wish to install, and Disk Manager performs the complete installation. In most cases a single partition will be created to access the entire disk. If you are installing a hard drive larger than 2GB and you did not boot to an operating system that supports the FAT32 file system (Window 95B/98), your drive will be installed with more than one partition. For step by step installation steps please refer to the Disk Manager Help System located on the Disk Manager diskette (type HELP at the A: prompt). For a customized installation, go to Advanced Installation under Advanced Options.

Advanced Mode
This option provides a customized approach to hard drive installation. It allows you to choose from pre-defined partitioning options or define custom partitions and select Fast Format or full format modes. After all selections are complete Disk Manager will complete the installation automatically. Detailed status information is displayed while the installation is in progress. For step by step installation steps please refer to the Disk Manager Help System located on the Disk Manager diskette (type HELP at the A: prompt).

Manual Mode
This mode is recommended for experienced users only who prefer to manually create and format their own partitions. For further information about this specific menu option, choose the option and press F1.

Disk Manager with other Operating Systems

- **Microsoft Windows NT support.**

  - Windows NT 3.1 does not provide support for drives installed using Ontrack Proprietary Format. You must install your drives using BIOS Standard Format (DM /N). Please refer to the help text on the Disk Manager diskette for detailed installation instructions.
  - Windows NT 3.51 and 4.0 are fully supported by DM for DOS v9.50. Please refer to the help text on the Disk Manager diskette for detailed installation instructions. See the FAQ section in this guide for service pack requirements.

- **IBM OS/2 Warp 3.0/4.0 support.**

  - Updated 0S/2 drivers may be required for Warp 3.0 support. These are provided in the file OS2DRVR.ZIP available from the Ontrack web site (www.ontrack.com).
  - OS/2 Warp 4.0 does not require the updated drivers. Please refer to the help text on the Disk Manager diskette for detailed OS/2 installation instructions.

- **UNIX, XENIX, Linux support.**

  - DM /N provided for this support (and some hardware situations). Please refer to the help text on the Disk Manager diskette for detailed installation instructions.
  - Do not use Boot Management which changes the MBR (LILO within Linux).
  - Beyond 1024 cylinders may be supported.
  - Operating Systems are responsible for drivers understanding DDO – the newest versions of Linux have 'intelligent' drivers.

- **Novell servers - Do not use Disk Manager!**

  - DOS workstation (Novell client) drives supported, not server drives.
  - NetWare's INSTALL program cannot work with DDO.

Features FAQ

Q: *DiskGo!* (Windows) version 2.50 and Disk Manager (DOS) v9.50 create file systems for what operating systems?

A:

- DOS 6.22 (Disk Manager is compatible with the Windows 3.x shell)
- Windows 95A/B (OSR1/OSR2)
- Windows NT 3.51 (with Service Pack 5)
- Windows NT 4.0 (with Service Pack 3 minimum)
- OS/2 Warp 3.0 and OS2 Warp 4.0

Features FAQ (continued)

Q: Can I install a drive larger than 8.4 Gigabytes, and access the entire space using DOS versions 5.x or 6.x?
A: Yes, If you are running DOS versions 5.x or 6.x Disk Manager will automatically add support for hard drives with capacities greater than 8.4 Gigabytes. Disk Manager will install the ONTRACKD.SYS driver and add a line to CONFIG.SYS to load the driver when the computer is booted. ONTRACKD.SYS provides extended INT13 support, allowing access to space above the 8.4 Gigabyte barrier previously unusable by DOS.

Q: Do I need the new version of Disk Manager software?
A: Yes, if you don't have Disk Manager and need support for one of the following:

- A solution for large ATA drive BIOS limitations.
- DOS 5.x to 6.x support for hard drives larger than 8.4 Gigabyte.
- FAT32 support for Windows 95B (OSR2) and Windows 98.
- New utilities to help you install and diagnose hard drives.

Q: Can I safely upgrade to Disk Manager software v9.50 from an older version of the software?
A: Yes, you can upgrade from Disk Manager software versions 6.x, 7.x, and 8.x without concern for harming your data.

Q: How do you get a FAT32 file structure?
A: The FAT32 file structure is determined specifically by the latest boot kernel from Microsoft.

- If you are not booting to a Windows 95B (OSR2) or Windows 98 diskette then you have a FAT16 file structure.
- *DiskGo!* is compatible with the FAT16 and the FAT32 file structures.

Q: My system is a Pentium, do I need Disk Manager?
A: That depends on your BIOS. There are some legacy Pentium machines that have BIOS's that cannot access a hard drive greater than 2.1GB. The following is one possible way to detrmine if your computer can translate your large hard drive:

- Install your hard drive, set the CMOS setting for the hard drive to Auto-detect (AUTO) for both the drive type and the translation mode (MODE) settings.
- Boot from a DOS diskette that contains the FDISK program.
- Run FDISK and verify the hard drive size. If the capacity reported by FDISK is not for the entire size of the drive then you will need Disk Manager (note: The FDISK program for DOS 6.22 is restricted to 8.4GB).

Q: I am setting up a new primary hard drive. Disk Manager is asking me what operating system I am going use. The problem is I have a Windows 95 upgrade and I need to load Windows 3.1 first, which option for the operating system do I choose?
A: If you are going to eventually put Windows 95 on then choose that option, but only use FAT16 partitions. Then load the other operating systems in the order required.
Be aware that if you should stop the upgrade process for any reason, you will not be able to see any partitions past 8.4GB. However, once Windows 95 is loaded and running it will use the appropriate drivers to access the partitions.

Utilities FAQ

Q: Is the Disk Manager software compatible with other software utilities?
A: Yes, as long as the software utilities:

- Permit Disk Manager software to load at boot-up
- Does not write or permit writes to the boot sector.
- *Always check with the software manufacturer if you have questions about the purpose and compatibility of a particular piece of software.*

Q: How can I use the FileCopy utility with Windows 95 or 98 operating systems?
A:

- Boot to the Windows 95 or 98 desktop and run FileCopy from an MS-DOS window.
- Use FileCopy to copy data from any drive partition to any destination drive partition. (FileCopy will preserve all long file name format details).
- If the destination partition is bootable, FileCopy will copy the system files necessary for the drive to boot.
- After FileCopy, the new drive can be physically installed as the boot drive in the system and boot just like the original boot drive.

Q: Is Disk Manager software's Dynamic Drive Overlay (DDO) compatible with Windows NT?
A: Disk Manager for DOS v9.50 is compatible with Windows NT. However, there are three situations in which installation of Windows NT may fail:

1. A drive with a jumper option for alternate capacity, which is enabled (Quantum hard drives do not support this type of jumper). Windows NT installation may fail in this situation if the drive has more than 4096 cylinders, or has a capacity greater that 2 gigabytes, and has been installed with Dynamic Drive Overlay.

    - In this situation remove the alternate capacity jumper and reinstall Windows NT.
    - Please refer to your hard drive documentation or drive manufacturer for the alternate capacity jumper location. You may also contact Ontrack Technical Support.
    - If the Windows NT installation still fails, upgrade to Disk Manager software version or Disk Manager for Windows software. Contact Ontrack for upgrade details.

2. Drives with 8323 to 13315 cylinders, or a capacity of 4 Gigabytes to 6 Gigabytes.

    - Windows NT installation may fail with the error message “Damaged or Unformatted Partitions.”
    - This failure may occur with or without Dynamic Drive Overlay installed.
    - In this situation, you should upgrade to Disk Manager software version 8.02 or newer, or Disk Manager for Windows software. Contact Ontrack for upgrade details.

Utilities FAQ (continued)

3. Windows NT Emergency boot diskette procedures may fail when using NTFS (only), since our driver may not be intact on the front of the hard drive.

    - By using a Windows NT emergency diskette for the creation of the Disk Manager emergency diskette, our driver would pass translation parameters to NT.

Q: I see duplicate icons for my hard drive in Windows 95A (OSR1) when viewing the drive in *My Computer* from the Windows Desktop, why?
A: You need an update from Microsoft (DSKTSUPD.EXE). Please reference article number Q148821 in Microsoft's online Knowledge Base for instructions on obtaining the update.

Troubleshooting FAQ

Q: My hard drive fails to boot after successfully performing the Disk Manager installation (or upgrade), why?
A: Try the following steps to correct this problem:

1. Run Disk Manager, and select Advanced Options, Maintenance Options.

2. Select "Update Dynamic Drive Overlay".

3. Remove the /M command line switch.

4. Enter the following command line switches /C /L=0 /P- /V=2.

5. Reboot your system. If it now boots, you may remove one switch at a time to isolate problem. (For detailed information on each of these switches, please view the Online Manual located on the Disk Manager diskette).

Q: I am using *DiskGo!* v2.50 or Disk Manager for DOS v9.50 loading Windows NT 4.0 and a hard drive larger than 8.4GB. NT does not give me the full size, why?
A:

- You will need at least NT 4.0 Service Pack 3 (SP3) so you can access the entire drive (SP3 is the absolute minimum requirement, SP5 is preferred).
- Service Packs for Windows NT can be obtained at the Microsoft Web site: http://www.microsoft.com/

Q: I am using OS/2 Warp 4.0 and a hard drive larger than 8.4GB. OS/2 does not give me the full size, why?
A: You will need the Component Update so that you can access the entire drive.

- Please be sure and read the README.TXT very carefully regarding this Component Update.
- You may find the Component Update at: http://service.software.ibm.com

Troubleshooting FAQ (continued)

Q: I no longer need Disk Manager, how do I remove it?
A: You must have all of the following:

1. A BIOS that can natively translate the drive. Disk Manager has set up the drive with a specific geometry, your BIOS must have that same geometry.
2. You must have a clean, write-protected, DOS bootable diskette with the programs FDISK.EXE, SYS.COM, and FORMAT.COM.
3. You must have the latest version of Disk Manager on a diskette.
4. **Back up your data and verify that it is a valid backup.**

Preferred Disk Manager removal:
Note: **If for any reason this process does not complete, all data will be lost!**

1. Go into the BIOS setup and set the Type to 'Auto' and the mode to 'LBA.'
2. Boot cleanly to a bootable diskette and get to the 'A:\' prompt.
3. Run Disk Manager.
4. Choose 'Advanced Options', then choose 'Maintenance Options.' Choose the 'Dynamic Drive Overlay' option.
5. Choose the 'Remove Dynamic Drive Overlay' option.
6. At this point Disk Manager will inform you whether this process will be **data destructive**. **If you receive a large red box informing you that if you proceed you will lose access to the data, then CANCEL the operation**. Disk Manager is informing you that your BIOS is not natively translating the drive in the same manner as Disk Manager.
7. If your BIOS can translate the drive choose the 'Quick Uninstall' feature.
8. The BIOS Standard Uninstall will migrate the drive back 63 sectors.

If you encounter errors proceed with the following Disk Manager removal:

1. **Backup the data and verify that it is a valid backup**.
2. Insert a bootable DOS diskette that does not have autoexec.bat or config.sys files, but does have FDISK.exe.
3. Turn on your computer.
4. Check the CMOS settings; make sure PC is set to "boot to A: before C:" and setup to Auto-detect, Logical Block Addressing (LBA) or Translation modes if available.
5. After booting to an A: prompt, type "fdisk/mbr" and press Enter. (In a moment, you will be back at the A:)
6. Type "fdisk" and press Enter.
7. Select #3, "Delete partitions".
8. Select #4, "Delete non-DOS partition".
9. Create a new Primary DOS or Extended DOS partition.

FileCopy

Overview

The intent of FileCopy is to streamline the task of adding a new hard drive as the boot drive in your system, when used in conjunction with ONTRACK Disk Installation Utilities. This is done by copying all your existing files and directories from your old drive to the new hard drive, thus allowing you to make the new drive the boot drive.

FileCopy is a DOS program, which performs a file-by-file copy, of all files from one drive letter to another. It is compatible with DOS, Windows 3.x and Win 95/98. You can run it from DOS 3.31 or greater, from Windows or in Windows 95/98 from an MS-DOS window. It will copy both FAT16 and FAT32 partitions, as well as copying files from FAT16 to FAT32, or FAT32 to FAT16.

FileCopy will copy all files without changing their contents. (**See SWAP FILES below) It will copy hidden, system, and read-only files including all subdirectories. It will copy Win 95/98 long-file-name files preserving the exact file name. It preserves all filenames, attributes, and dates. If the file to be copied exists on the destination, FileCopy will ask if you would like to overwrite the destination file.

FileCopy can also make your destination drive bootable if it is a primary partition and if the source drive is bootable. FileCopy transfers the necessary boot sector information to your destination drive and marks the partition bootable.

Running FileCopy

To run FileCopy from DOS, type "filecopy" at the prompt. From windows simply double click on the FileCopy application. In both cases you will be prompted to enter a source drive and destination drive.

Other Applications

FileCopy cannot copy files if they are in use by another application. For example, many virus checkers maintain special files that are not accessible by other applications. These files are often just simple files that get created upon start-up of the virus checker. It is important that you shutdown ALL other applications, including those running in the background such as virus checkers and screen-savers.

Running SCANDISK or CHKDSK

If FileCopy reports an error while copying a file or directory, we recommend running scandisk (for DOS versions 6.20 and later) or chkdsk (for DOS versions before 6.20) on the source drive. Both utilities are designed to optimize file storage and fix problems on your hard drive. It is also a good idea to run scandisk or chkdsk on the drive you plan to copy before running FileCopy.

FileCopy (continued)

Files and Directories with the Same Name
If there is a directory on the destination drive with the same name as a file on the source drive, or a file on the destination drive with the same name as a directory on the source drive, FileCopy cannot copy the file. A "Cannot create" error will be displayed, with the option to continue by pressing 'Y' or exit by pressing 'N'. It is recommended that you exit and rename the file or directory on either the source or destination drive. If you choose to proceed by pressing 'Y', FileCopy will proceed to completion, however, not all files or directories will be copied to the destination drive.

Swap Files
FileCopy never copies SPART.PAR and WIN386.SWP. These files are related to Windows swap files and are rebuilt by Windows on startup if they are missing, while keeping all your swap file settings intact. FileCopy will always copy the permanent swap file 386SPART.PAR but it will zero-fill its contents. When Windows restarts, it will use the swap file as normal.

Invalid Drive Letter Errors
- If source or destination drive letter is something other than C - Z.
- If source or destination drive letter is a CDROM drive letter.
- If source and destination drive letters are the same.
- If unable to analyze the size and contents of the source drive.
- If the destination drive is drive C:, you will be prompted to confirm before continuing.
- If the space available on the destination drive is not of equal or greater capacity.

After FileCopy has Completed
- If you plan on swapping the source and destination drives, remember to change jumpers and CMOS settings.

Upgrading
- If upgrading old read/write partitions, FileCopy can only be used to copy files to the first partition.

Known Limitations
- If you formatted the drive that you intend to copy files to with a product other than the ONTRACK Disk Manager Installation Utilities, you must restart your computer for the changes to take affect. Not doing so will result in FileCopy performing incorrectly, specifically in making your destination drive bootable.
- If running Windows 95/98 and the drive you intend to copy files to is using MS-DOS compatibility mode file system, FileCopy will be unable to make your destination drive bootable.
- DOS limits the number of entries in a directory based on the cluster size of a particular partition. If FileCopy is unable to create a file or directory on the destination, it may be due to the fact that the maximum number of entries has been reached for the particular directory.

CDUpdate

Overview

CDUpdate is a Windows based utility provided with the *DiskGo!* version of the Disk Manager software package. It modifies system references when the drive letter initially assigned to your CDROM changes after a new hard drive has been installed. CDUpdate is for Windows 3.x and Windows 95/98 use only. It can be located under the *DiskGo!* program group from the Windows Desktop (or Program Manager for Win 3.1x users).

When a new hard drive is added to your PC, the operating system automatically moves the drive letter assigned to the CDROM to a position that follows the drive letters assigned to all hard drive partitions. Therefore, applications or games that referenced the CD-ROM will have the incorrect drive letter assigned to them in their configuration files. CD Update is a program that re-identifies your CDROM and modifies the configuration so your applications or games may correctly locate your CDROM.

General Information on Quantum (OEM) versions of Disk Manager

- Designed to work with systems that include at least one Quantum ATA hard drive. Disk Manager must be able to identify at least one OEM (Quantum) ATA drive for installation.

- Disk Manager will work with other manufacturer's drives: partition, format, and provide translation through the Dynamic Drive Overlay (DDO) if the presence of a Quantum ATA hard drive is detected.

- Do not install Disk Manager when another 3rd party software package such as Microhouse's Easy Drive or Maxtor's MaxBlast has already been installed.

- Technical support for other (non-Quantum) manufacturer's drives is not Quantum's responsibility. Please contact the appropriate OEM for support on their hard drive products.